

## Instructions:

Set the stage by asking students to describe local rocks or rock formations, or ones that they have seen during walks along a river's edge, on a mountain, or during drives along highways that were built through road cuts. Be sure to have several rock samples distributed around the room.

Ask the students questions such as, "Have you ever wondered just how these rocks form?" and "Are new rocks forming at this moment?" Ask each student to write down one rock-related question they would like to have answered in class. Have students read the Student's Information and accompanying Rock Cycle Diagram. Discuss the three classifications of rocks: sedimentary, metamorphic and igneous. You may also want to introduce the geologic history of Stone Mountain given on page 1.7.

### Part A: Weathering

Each student should complete "The Pressure's On" worksheet as they do this activity. Cover all desk tops with newspaper. Give each student a sheet of wax paper, a pocket pencil sharpener and four crayons of the same color. The crayons represent rock material and the pencil sharpeners represent **weathering** agents. Students should remove the paper from the outside of their crayons and carefully shave the crayons with the pencil sharpener. All of the crayon

fragments (which represent rock **sediments**) should be kept in a small pile on the wax paper. Do not mix the colors – each student should use his/her own piece of wax paper.

As the students are "weathering" their crayons, call their attention to the size and shape of the fragments. Remind them that many of the rocks in the Blue Ridge Mountains today probably have their origins in sediments that accumulated in an ancient ocean over 700 million years ago. Discuss the following questions:

- Do you think that weathered fragments of rocks are all the same size or shape?

( Answer: No.)

- Why or why not?

(Answer: The process of weathering depends on the chemical composition of the rock as well as environmental factors such as temperature, humidity, the presence of plants and animals, etc.)

- What are some of nature's weathering forces?

(Answer: **Mechanical weathering** forces can include water, ice, wind, growing roots, worms and burrowing animals, lightning and human activities. In addition, heating and cooling can cause rocks to expand and contract, and then break.

**Chemical weathering** forces include oxygen, carbon dioxide and water, which react with a rock or mineral resulting in a chemical change. At

Stone Mountain, a chemical weathering process called **ex-foliation** causes curved sheets of rock to be sloughed off like the layers of skin on an onion.

When the "weathering" is complete, the students should wrap their fragments in wax paper and place each wax paper packet in an envelope, unless you plan to do Part B immediately. Label each envelope as to its contents, "red," "yellow," etc., for proper distribution when the activity is resumed.

### Part B: Erosion

Once rock fragments have been created, they are usually moved by some force of nature. Here, the students act as the erosive force as they move the envelopes containing the fragments within the room.

- What is this force of movement called and what are some of its causes? (Answer: Erosion, caused by water – such as streams, rivers and ocean waves – and by wind.)

- Where do rock fragments tend to collect? (Answer: Downhill from where they were first formed.)

- Why? (Answer: Gravity.)

- Why do similarly-sized fragments seem to be found together?

( Answer: Because similar weathering processes will usually take place in one particular area. Smaller, lighter rock fragments will be carried farther away in a winnowing effect.)